

IN THE DRAWINGS

A Substitute Sheet showing Fig. 1 and a New Sheet showing Fig. 2 are attached (ATTACHMENT I).

Fig. 1 has only been changed to indicate that it is 1/2 instead of 1/1.

Fig. 2 has been added to illustrate the configuration of transistors disclosed and claimed, including the N-channel and P-channel transistors; no new matter has been added as the specification at page 11, lines 19-26 provides support for these claimed features. A person of ordinary skill in the art understands from the well-known schematic symbols used as to whether a specific transistor shown is a P-channel or an N-channel.

REMARKS

Claim 1 now substantially recites the subject matter of claims 1, 2 and 3.

Amended claim 15 is supported by original claim 7. Amended claim 15 features the photo-sensitive element shown in Fig. 2 and described in the specification at page 11, line 25 through page 12, line 26.

New claims 16 and 17 recite features from claim 15 as it was prior to the present Amendment. Claims 18 and 19 correspond to claims 12 and 13.

Applicants respectfully request reconsideration of all grounds of objection and rejection in the Office Action.

I. Objection to the Drawings

Fig. 2 has been added to show the circuit having the proper N-channel and P-channel transistors. Applicants respectfully submit that a person skill in the art understands this from the standard schematic symbols used.

In addition, the subject matter of the claims (10 and 11) reciting the area emptied of free loads has been removed.

II. Objection to the Title

The title of the invention has been changed to PHOTO-SENSITIVE ELEMENT FOR ELECTRO-OPTICAL SENSORS OPERATING UNDER VARIOUS ILLUMINATION CONDITIONS, which is indicative of the claimed invention.

III. Objections to the Specification

A substitute specification (along with a marked up copy showing the changes made) is submitted herewith. Now new matter has been added. With regard to some of the terms of art,

Applicants respectfully submit, for example, that "tension" is another way to express voltage (such as in a high-tension line), and that a "key" is a switch (the explanation of an ideal key or switch is supported in the original specification at page 4, lines 7-13). Additionally, "piloted" means driven, and a "pilot tension" means a driving voltage. A driving voltage is an external voltage signal that drives a transistor in order to put it in either a reset state or an integration state dependent upon the value of the voltage used to drive the transistor (please see the original specification at page 9, line 28 to page 10, line 7 for a description of a driving voltage). The term "active load" is also understood by the artisan to mean a transistor causing logarithmic compression of the photo-detected signal, as disclosed on page 4, lines 14-18 of the original description. The substitute specification includes the more commonly-used terminology for the terminology objected to in the Office Action. No new matter has been added.

Accordingly, Applicant respectfully submits that the objections to the specification have been addressed.

IV. Rejections under 35 U.S.C. §112, first paragraph

The claims have been amended in accordance with the revised terminology in the substitute specification. As discussed in Section III above, tension is another way to express voltage (such as in a high-tension line), and that a key is another term for a switch, and piloted means driven. Accordingly, the amendments to the claims do not introduce any new matter, and merely substitute more commonly-used terms.

Reconsideration and withdrawal of this ground of rejection are respectfully requested.

V. Rejections under 35 U.S.C. §112, second paragraph

For the reasons discussed in Sections III and IV, the claims are compliance with 35 U.S.C. with §112, second paragraph as well. For example, the meaning of the recitation in claim 1 that "an ideal switch is driven by a voltage" is well known and understood in the art.

VI. Rejections under 35 U.S.C. §102(b)

Claims 1, 6, 10, 12 and 13 were rejected as allegedly being anticipated by Hagihara (EP 104818, hereafter "Hagihara"). Applicants respectfully traverse this ground of rejection.

It is alleged in the Office Action that Hagihara "appears to disclose the claimed invention since Hagihara's circuit is similar to the Figure of the claimed invention."

However, Hagihara does not disclose a photo sensitive element having, *inter alia*, a current conversion circuit with first transistor of a first type (a P-channel type first transistor 21 as recited in claim 1 and shown in Fig. 1, and an N-channel type first transistor 210 recited in claim 15 and shown in Fig. 2), and wherein in both cases, the type of transistor used for the second transistor (22, 220) is different from the first transistor (21, 210).

With the configuration of the present claimed invention, for example, the P-channel type configuration first transistor 21 may be used as an ideal switch, assuming a reset state if the voltage applied is low (please see page 9, lines 17 and 17 of the original specification), and an integration state if the voltage applied is high. The second transistor, 22, which is of the N-channel type in claim 1, is switched off by the P-channel transistor when the voltage is low (original specification at page 4, lines 14-15).

The advantages of using a conversion circuit with two different types of transistors is discussed at page 5, lines 5 to 19 of the original specification, by having the relative gate terminal connected to an external circuit which allows the value of the applied voltage to be

varied, wherein the P-channel transistor is used as an ideal switch driven by a low voltage to a high voltage, so that the photosensitive element achieves either a reset or an integration state depending upon the amount of voltage applied. The invention results in linear reading at low illumination and logarithmic conversion of the reading in high illumination. Thus, the photosensitive element performs well under both low illumination and high illumination.

In contrast to the present claimed invention, Hagihara shows all the same type of transistor (e.g. N-channel in Abstract). Thus, Hagihara fails to disclose the arrangement of the photo-sensitive element as in present claimed invention. Nor would an artisan have found the present claimed invention to have been obvious at the time of invention in view of Hagihara. Applicants submit the cited but unapplied references also fail to disclose Applicant's invention.

As Hagihara fails to disclose all of the features recited in the present claims, none of the claims are anticipated by Hagihara. Reconsideration and withdrawal of this ground of rejection are respectfully requested.

VII. Rejections under 35 U.S.C. §103(b)

Claims 2-5, 7-9, 11, 14 and 15 were rejected as allegedly being obvious over Hagihara (EP 104818, hereafter "Hagihara"). Applicants respectfully traverse this ground of rejection.

In light of the comments made in the traversal under 35 U.S.C. §102(b) in Section VI, it is respectfully submitted that none of the present claims would have been obvious to an artisan in view of Hagihara. Hagihara fails to disclose or suggest the use of different types of first and second transistors in the conversion circuit, as recited in claims 1 and 15. Claims 4-5, and 9-15 are also not suggested at least for this reason.

The selection of one type or another of transistor is not a simple matter of design choice,

but it was selected by the inventors because the behavior (linear or logarithmic) of P-channel type and N-channel type transistors allows for adaptation to the external conditions of light.

Thus, Applicants respectfully submit that none of the present claims would have been obvious to a person of ordinary skill in the art at the time of invention in view of Hagihara. Reconsideration and withdrawal of this ground of rejection are respectfully requested.

VIII. Conclusion

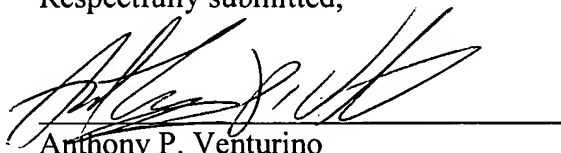
For all the foregoing reasons, all grounds of objection and rejection in the Office Action have been overcome. A Notice of Allowance is respectfully requested.

If there are any issues which may be best resolved by telephone, please contact the undersigned attorney at the local Washington, D.C. telephone number listed herein below.

Respectfully submitted,

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By:


Anthony P. Venturino
Registration No. 31,674

APV/SG
ATTORNEY DOCKET NO. APV31683

STEVENS, DAVIS, MILLER & MOSHER, L.L.P.
1615 L STREET, N.W., SUITE 850
WASHINGTON, D.C. 20036
TEL. 202-785-0100 / FAX. 202-408-5200

Attachment I:
Revised Fig. 1 and New Fig. 2

ATTACHMENT I – Replacement Fig. 1 and New Fig. 2